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PATENT
Docket No. 72145.012400/US**REMARKS**

In this response, claim 1 has been amended, claim 21 has been canceled without prejudice, and new claims 27-31 have been added. Thus, claims 1-14 and 22-31 are pending. The office action issued by the Examiner has been carefully considered by Applicant.

The Office Action is a premature final action. Applicant requests reconsideration and withdrawal of the finality of the rejection of the last Office Action as having been premature. The preceding Office Action specifically cited sections of the Buynoski reference, but only mentioned Sugizaki without citation of any sections thereof. Applicant made no amendments whatsoever to the claims in the prior Action. In the current Action, the Examiner has only now first made any specific references to sections of Sugizaki. Thus, Applicant has not had any opportunity to consider and amend claims 1 and 2 in light of the Examiner's new, specific reliance on the Sugizaki reference.

In addition, this Action is the first time that a rejection has been made of claim 13 based on Sugizaki. The prior action only cited Buynoski against claim 13. Therefore, a new grounds of rejection has been applied that was not required by Applicant's action. Given that Applicant made no amendments to any claims in the prior response, it is clearly improper to change the basis of the rejection of claim 13 from one relying solely on Buynoski to one that includes Sugizaki, and then to issue a final action to Applicant. This gives Applicant no opportunity to consider and amend claims in preparation for an appeal and is contrary to the goals of the Office to improve efficiency in the appeals process. Applicant should have the benefit of the complete basis of the Examiner's position and have an opportunity to amend prior to being forced to file an appeal.

The amendments to the claims should be entered. Under 37 CFR 1.116(b), Applicant believes that the amendments to the claims above should be entered. Due to the late application of Sugizaki by the Examiner, it is only now that Applicant is able to amend

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the claims in full light of the Examiner's position. These amendments were not presented earlier because of the absence of the specific application of any section by the Examiner of Sugizaki discussed above and the inability of Applicant to know the extent or nature of the Examiner's reliance on Sugizaki.

The amendments made herein also present the claims, if they are still maintained as rejected by the Examiner, in a better form for appeal. This is so because, among other reasons, claim 1 has been amended giving consideration to the Examiner's position with respect to both Buynoski and Sugizaki. Certainly claims are in better form for an appeal when crafted by Applicant after the Examiner has finalized his position (which did not occur until the present Action).

Independent claim 1 has been rejected under 35 USC sec. 102(b) as being anticipated by Sugizaki (U.S. Patent No. 6,437,434). Anticipation requires that every element of a claim be disclosed in a single prior art reference. Applicant's independent claim 1 has been amended to recite that the moat contains liquefied material (e.g., a polymer used to form a collar around a solder ball) that flows to the moat. The Examiner makes reference to a moat 7 of Sugizaki's Fig. 2B. Yet, Sugizaki, throughout its entire text, always only describes the outer moats 7 as being filled with elastomer. Also, Sugizaki's elastomer 10 is taught for coating bonding wires 9 (col. 5, lines 20-21) and is not taught or suggest for use in applying elastomer 10 to form around BGA ball 4. Thus, moat 7 is not able to contain liquefied material that flows to the moat where the liquefied material is of a type provided to be formed around a solder ball on the solder ball pad, all as recited in Applicant's amended claim 1.

In particular, Figs. 3A to 3G are described by Sugizaki as illustrating the manufacture of the board 2 shown in Fig. 2B (see Sugizaki col. 4, lines 44-48, and col. 5, lines 22-23). Sugizaki describes that after openings are formed in the passivation layer 11, holes 8 and outer moats 7 are fill with elastomer 6 (see col. 4, lines 58-63). This is illustrated in Fig. 3D.

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The Federal Circuit has stated that for a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. Motorola, Inc. v. Interdigital Tech. Corp., 121 F.3d 1461, 43 USPQ2d 1481, 1490 (Fed. Cir. 1997). Further, in order to make a prima facie case of anticipation, as required by the Examiner, the prior art reference relied on must be interpreted in its entirety (and not based only on isolated portions of the reference) from the viewpoint of one of ordinary skill in the art. All of Sugizaki's moats are filled when using his described manufacturing processes for all embodiments, and one of ordinary skill in the art would not interpret Sugizaki to disclose a moat that is manufactured for containing a liquid.

Sugizaki uses the elastomer in moat 7 as part of the fundamental stress relief provided by Sugizaki's invention. Sugizaki describes the release of stress (col. 4, line 26) and that the elastomer layers 6 and 10 are "high-elastic" layers (col. 4, lines 15-16). Further, Sugizaki does not make mention of any liquefied material flow. Thus, Sugizaki does not recognize and is not presented with the problem of collection of any liquid flowing from the region of a solder ball or solder ball pad. One of ordinary skill in the art would not read the entirety of Sugizaki to disclose any moat built to contain a liquid.

Independent claim 13 appears to have been rejected under 35 USC sec. 102(b) as being anticipated by or under 35 USC 103 as being obvious in view of Sugizaki (U.S. Patent No. 6,437,434). The Examiner's statutory basis for the rejection applying Sugizaki is not clearly stated. Applicant's claim 13 recites a polymer collar. However, Sugizaki does not disclose any polymer collar.

An obviousness rejection requires that there be some suggestion in the prior art to make a combination. The Examiner has stated that use of a polymer collar is admitted prior art, but has failed to provide any suggestion to combine such a collar with Sugizaki in a way that meets the limitations of Applicant's claim 13. Without such a suggestion, the Examiner has not met his burden of making a prima facie case of obviousness. Thus, there

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is no proper prima facie case of rejection of claim 13 under either 35 USC 102 or 103, and the finality of this rejection should be withdrawn on this basis alone.

One of ordinary skill in the art would not be motivated to combine a polymer collar with the invention of Sugizaki due to the disadvantages that would result. First, if wire bond 9 (see, e.g., Sugizaki Fig. 2A) were applied prior to forming a polymer collar and solder ball drop, the printing of the polymer collar would likely damage the wirebond. Second, if the wirebond were applied after the polymer collar and solder ball drop, the wirebond pad adjacent to the solder ball would be covered in cured polymer collar material, thereby inhibiting wirebonding.

Moreover, note that Applicant's claim 14 recites that the moat prevents flow of liquefied polymer collar. As discussed above, nothing in Sugizaki teaches or suggests that moat 7 contain liquid. The Examiner's proposed combination would be a structure having a filled moat and a collar. This would not meet the limitations of Applicant's claim 14.

Applicant's new claim 27 recites a second passivation layer. In contrast, Sugizaki does not show a second passivation layer. It should be noted by the Examiner that Applicant's original dependent claim 8 also recites a second passivation layer.

Applicant's new claim 28 recites a collar around the solder ball. Sugizaki does not itself disclose a collar as discussed above.

Applicant's new claim 29 recites that the moat is not formed in the semiconductor substrate. For example, Applicant's Fig. 4 shows the moat formed in a passivation layer 412, but not formed in semiconductor substrate 402. In contrast, Sugizaki's moat is formed in silicon interconnection board 2.

Applicant's other claims 2-12, 22-26 and 30-31 depend, directly or indirectly, from independent claims 1 and 13 and are believed allowable for at least the reasons discussed above.

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In view of the above, Applicant respectfully requests reconsideration of this application and the allowance of all pending claims. It is respectfully submitted that the Examiner's rejections have been successfully traversed and that the application is now in order for allowance. Applicant believes that the Examiner's other arguments not discussed above are moot in light of the above arguments, but reserves the later right to address these arguments. Accordingly, reconsideration of the application and allowance thereof is courteously solicited.

Respectfully submitted,



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